SUBTERRANEA BRITANNICA

SECETARY'S NEWSLETTER 7
(November 1991)

Editorial

The rise in Subscriptions

Because of printing and postage costs the society was heading for bankruptcy. It was agreed at the AGM, that this year the subscriptions will have to be increased. We only survived last year because we have a number of generous members. They voluntarily paid the an extra subscription. On behalf of the society I thank them.

A newsletter, will in future be sent out after the AGM. This will tell of financial matters and be accompanied by the annual subscription reminder.

A bone of contention.

Some ill-feeling about subscriptions has been generated, when newly joined members are asked to pay twice in a short time. We try to avoid this but it can happen by misfortune. If you joined within 3 months of November 1st and get a subscription notice, ignore it or complain to me. If you joined 9 months before November 1st I think it is fair to expect you to pay again in November.

What happens if you join during an intermediate period? If you get a subscription notice I think you should pay what proportion of the subscription you think fair and point out your reasons to the treasurer

This line of reasoning is purely that of the Tadds who send out the all literature and decide whether people are still members or not. We know from Roger Morgan who have not paid but we have to decide if they can still be considered as members.

Obituary

We regret to announce the death of one of our earlier members Richard A. Lewis who lived in Lewes, Sussex. Over many years he experienced a lot of ill health, but kept cheerful whilst continuing with his historical and archaeological interests particularly in the conduits and sewers of the Cluniac Priory in Lewes. Some members may remember his fascinating lecture on this subject in Cambridge for a conference day in 1978.

We offer sincere condolences to his wife.

Sylvia P. Beamon

Sylvia Beamon relinquishes Bulletin editorship

After seventeen years Sylvia is in the process of handing the editorship to a dubious Malcolm Tadd. Unfortunately there don't seem to be any other volunteers. Let us all give thanks to Sylvia for the past and pray for the future

Ron Martin receives prestigious IA awards

For work in recording the cement shaft kiln at Beddingham Lewes, East Sussex, our member Ron Martin has received not one but two awards from the Association for Industrial Archaeology - unprecedented!

The Beddingham Kiln includes subsidiary underground structures and this explains how other SB members became involved. The glory to SB is a little reflected, since Ron is General Secretary of the Sussex Industrial Archaeology Society who were the people asked, in the first place, by Blue Circle Industries plc, to perform the survey.

The first of the awards, to Ron, was for the recording, while the second was for the most enterprising project of the year.

Ron was congratulated at the recent SB AGM

Our New President.

The committee of Subterranea Britannica is extremely pleased on announce that Professor Tim Shaw has agreed to be our President. This was proposed at the AGM by Martin C. Black and needed no seconder since there was universal enthusiasm for the proposal.

Professor Shaw is Professor of Mining, and also Professor of Mining Archaeology at the Royal School of Mines, and some of us will remember his lecture at a previous day-conference.

New Members

Welcome to:

Pat Briggs	Hertford
Richard Hope-Hawkins	Bristol
Steve Gill	Cheltenham
Nick. Cornwall-Smith	Bristol
Philip Dawton	London
Professor Kenneth E. Foote	Texas USA
Martin J. Haysom	Basingstoke

Beware Amstrad PCW users.

A new version of this computer is to be launched and will employ 3.5 inch discs. It is feared that the present 3 inch disk could become unavailable but worse still the disk drives could become obsolete, and, if your A-drive breaks down before you have copied your files to 3.5 inch disks, which is expensive,you could be left with a useless collection of 3 inch disks. Please think about the safety of your files.

I can provide more information if necessary. (Ed.)

Stone pits in the villages of Zichen and Zussen in Belgium
(De kuilen van Zichen en Zussen.)

By T. Breuls and B. Huis. Summarised by Joep Orbons and edited by Paul W. Sowan.

The Dutch organisation for researching underground limestone quarries, Studiegroep Onderaardse Kalksteengroeven, has for almost 10 years published an exceptionally well-produced journal, SOK Mededelingen. Although exclusively in Dutch, we have in recent years received, English abstracts of the articles, provided by our member Joep Orbons.

SOK Madedelingen 16 (1991) contains an exceptionally interesting article , which is a model of how a survey of similar excavations in a limited area ought to be conducted and published.

Abstract

Until about 1800 quarrying in Zichen and Zussen (in Belgium, about 8km SW of Maastricht in The Netherlands), and in many of the villages around Maastricht, was directed from the large abbies and monasteries. The law held that the owner of the surface was the owner, also, of everything below his own plot of land. Thus villagers seeking stone for their own purposes excavated pits (kuilen) under their own property. Today many of these are used to dump garbage or to dispose of sewage.

Details are given of all kuilen located in the area of the two villages.

When a new "kuil" was made, a shaft was dug 'in the backyard' until good stone was reached. A small chamber was made and a staircase cut up towards the cellar of the owner's house - a dangerous job. The stairway was called a "graet" derived from the Latin 'gradus', a stair. From the chamber, the stone was quarried towards the property boundary but not under the house. The shaft was extended downwards to the water table and used as a well. Because the "graet" came out inside the house, the "kuil" formed a very safe hiding place with its own water supply from the integral well. The quarrying technique was the same as the one used in all the other regular quarries in the area. The "kuilen" are quite stable,as they are not worked under buildings, although the "graet" may give cause for concern, as water leaking into it may undermine the house foundations.

The "kuilen" are generally 18-22 metres below the surface in the Zichen-Zussen area. Some have more than one shaft or "graet". sometimes two "kuilen" have been connected to form a larger system. In later years some of thee 'kuilen' have been used for growing mushrooms and chicory; sometimes they have been used for storage; but most of them have been used for dumping garbage.
Finding and listing the "kuilen" was hard work and the writers relied on the cooperation of the villagers who willing agreed to the breaking open of cellar floors and the emptying of the 'graets'. Sometimes hints were given of other "kuilen" even ones in the middle of fields. Sometimes these were found sometimes not.

As each "graet" was descended, a complete record and description of the 'kuilen' was commenced: inscriptions, winning-methods, geological aspects, wells, shafts, artifacts, were recorded, photographs taken, and surveys made.

All the regular quarries have names sometimes after their owners, users or neighbours (Lacroix-berg), sometimes after their (?secondary) uses (Koegat=Cow-hole), sometimes after their shape (Bottle-berg), or after the location (Wallenberg= "hill" next the Walloons land). Berg in South-Limburg Dutch, means mountain, also the quarry galleries inside the mountain, and therefore also quarry.

The "kuilen" on the other hand have no names. The authors in their inventory have named them after their present owners with streets and house numbers added.

The "Sjoonkeleberg" or "Grote berg" (Great quarry), the "Pitjesberg" and the "kuil" in Lindenstraat are not included in the survey as these are extensive networks formed by the interconnection of numerous 'kuilen' and the original size and character of each individual "kuil" is lost. The "berg van Hassen" has not been included as it was made after the Second World War.

The "kuilen" can be divided into three groups.

1. Surveyed "kuilen which have been visited, surveyed and photographed ... listed in this article;

2. 'Kuilen' to which access is not currently possible; the exact location of "graet" and shaft are known, but which could not be visited for one reason or another;

3. Suspected 'kuilen' of which nothing definite is known.

Some details are given for about 38 'kuilen' in all three groups, with full details, photographs and plans and/or sections for 19 of them.

<u>Summary SOK-Mededelingen No 17, June 1991</u>

<u>Bat-counts during winter 1990-1991 in Belgium, Limburg and Bassenge (Liege)</u>. P. Olefs, J. Willems and J. Dahlen.

There was a total of 1033 bats, an increase of 4.75% on the previous year. The article describes every quarry included in the count and the information is tabulated.

The table on page 7 gives the number of bats of each species this year and the increase or decrease from last year. The table at the top of page 8 gives the number of bats found in each quarry. The table at the bottom of page 8 enumerates the number of bats found in ice-houses. This is the first time bats were counted in ice-houses, so the numbers cannot be compared with previous years. The temperatures inside and outside of the ice-houses are included in the data.

<u>Summer bat counts in the Zichen-Zussen-Bolder quarries by catching the bats.</u> P. Olefs, J.Willems and J. Dahlen.

The purpose of this work was to answer the following questions.
Is the summer population equal to the winter population?
What is the proportion of males to females?
How do bats behave on the approach of winter?
Are there any maternity places in the system?

The study started in mid-august when the number of bats in the quarry starts to grow. Two quarries in which the bats have to pass in and out through a narrow tunnels, 1m by 2m, were chosen. From the 15th of August for six weeks the bats were caught on Friday evenings, switching between the quarries to minimise the disturbance to the bats. The far ends of the tunnels were closed with blankets. When a bat was detected flying in, the other end was closed as well. The bat was then caught with a small net. The netting started at 21.30 hours and continued for 3 hours after which the bats were released to give them time to hunt. The sex, weight, size and species of the bats were noted. The survey was stopped after six weeks so as not to disturb the bats with their mating.

Comparing the summer and winter results ; M.bechs is only found in the summer, M. daub is found more often in the summer, M. emarginatus and M. nattereri are even, M. dasy and M myst are found more in the winter.

Table 2 on page 24 shows that there are more males than females. No maternity places were found.

The behaviour of the different species is described. Some are aggressive, some nervous and some docile.

From the beginning of September the weights of the bats increased as the bats start to grow their fat reserves.

The writers hope to continue their studies.

<u>With the courage of despair - The German subterranean war industries in South Limburg and the Maastricht area during the German occupation.</u> J. Silvertant and P. Thal.

Many legends are in circulation that the Germans built factories to produce V-weapons in the last year of the war in St. Pietersberg and the Geul valley quarries. The truth is that many plans were made but only some factories actually built. This is the first in a series of articles covering the German war-use of the quarries in the area.

Early in 1944 the Germans started to spread their industries over a wider area in Europe. Valkenburg was one of the areas. In July 1944 the local organisation was complete. 1500 people were conscripted in Holland and taken to Valkenburg.
The legend started with the "Bronsdael" quarry. (Codename: Valerie 15) In 1944 work started on a repair station for BMW 801 aircraft engines and was completed in September. The planned cost was 1.4 million Reichmarks and work included, strengthening the pillars and laying a 15 cm thick concrete floor. In August the station was already 10% operative and full production was planned for October/November. This never happened because the Americans liberated the area.

Work which was actually completed included, arranging water and electricity supplies and taking security and anti-sabotage measures. Air conditioning was installed to prevent the aircraft engines from rusting and the galleries were standardised to a 2.2m by 2.2m shape. A railway line was built to connect with the main railway system and a test range for the aircraft engines constructed in a hollow road nearby. The works was planned to be operated for 24 hours a day by 700 people. Half way through August 350 people were in place.

The article considers the costs of the project

<u>Medieval rock-art in Valkenburg.</u> J.K.Hagers.

Under the castle of Valkenberg there are some galleries/abries with carvings on the walls. These were first found in 1931 but forgotten after the galleries collapsed in the 60s They were dated as "Ahrensberg" , paleolithicum (9000 BC) by documentary studies.

A new study was needed to confirm the date of the carvings which was very difficult because only two pictures and a plaster of Paris cast now exists. In the 30 years the carvings were available for public viewing they deteriorated rapidly. and it is unlikely that they survived the collapse of the galleries. The article shows pictures of the wall with the carvings and also of the carvings in detail. It is considered that one person only prepared the wall and did all the carvings.

It seems likely that the galleries were the result of limestone quarrying between Roman time and the destruction of the castle in 1672. The style of the carvings date them as early medieval.

Summary prepared by Joep Orbons. June 1991

Hazardous gases underground - up to date information on methane and radon

Between 1851 and 1980 there were 186 major ,explosions in British coal mines, resulting in almost 10,000 fatalities. Most of these events occurred before nationalisation, and if it were not for the Abbeystead and Loscoe events we might think the risks posed by methane a thing of the past. A recently published study by D.P. Creedy analyses the mechanisms by which methane is given off by coal seams de-stressed by mining activity...the effect has been demonstrated in seams up to 200metres above the one being worked, and up to 70-100 metres below it.

At 6.30 am on 24 March 1986 the Bungalow at 51 Clarke Avenue, Loscoe, Derbyshire was completely destroyed by a methane gas explosion, and three occupants badly injured. Loscoe (about 16 km north of Derby) lies above partially-mined coal measures and at first these were thought to be the origin of the methane. Tests by British Coal, however, made it clear that the potentially explosive soil gas present under the area was mainly a methane/carbon dioxide mixture, characteristic of landfill gas. The absence of detectable traces of ethane, propane, and higher alkanes ruled out a mains gas supply leak, or un-mined coal as a source. This was confirmed by C14 studies - modern (i.e. landfill) methane (which this was) has a modern, high C14 content; ancient methane from coal seams formed several hundred million years ago contains a negligible proportion (the half-life of C14 being of the order of 5730 years.) Further study at Loscoe revealed the landfill source about 100metres away... an old brickpit used for tipping domestic refuse between 1977 and 1982. Lateral migration of the methane/carbon dioxide mixture from the decaying rubbish followed pathways through shattered or much jointed rock - mainly (in this case) jointed sandstones and un-mined coal seams. The main contribution of former mining at depth below the area was the creation of more permeable gas pathways along the 'sagging zones' resulting from subsidence along the old longwall mine 'panel' some 200metres below. The message is clear...potentially explosive air/methane mixtures ,can be expected in and near any substantial deposits of decayable refuse, and can migrate laterally through apparently 'solid' ground over distances certainly up to 100 metres.

Radon was first thought to be good for for you ! It was even promoted as a 'health giving ' gas at a variety of spas! It is now recognised as a major contributor to the total background radiation dose received by the human body in the UK. At least 50% of the total dose for the average Briton is from radon (Rn 222) and thoron (Rn 220.) As Rn 222 has a half-life of 3.82.days, and is chemically and biologically inert, most of the radon breathed in is breathed out again and does no damage. But the radioactive daughter isotopes are microscopic solid particles which may easily remain in the respiratory system, and these are thought to pose a seriously increased risk of lung cancer. When dispersed in the atmosphere, radon poses few problems. But within enclosed spaces, whether well-sealed centrally heated houses , or underground cavities, it and its radioactive daughter isotope particles can accumulate and constitute a health risk. The uranium and the thorium from which Rn 222 and Rn 220 drive are more widely distributed than may be appreciated. Whilst of course significant quantities of high-uranium minerals are found only in particular British locations (notably Devon/Cornwall), uranium also forms the major component of trace minerals found in sedimentary rocks throughout much if not all of the UK, and a trace component in many major rock-forming minerals just as widely distributed. During the course of recent visit to an RAF high explosive store in an underground quarry in Jurassic strata, we were restricted by regulation to a maximum of two hours underground so as to ensure we did not receive anything in excess of a stipulated radon dose. The radon was from trace minerals in the Jurassic, not from nuclear weapons! Apart from the significant quantities of radioactive K40 in the glauconite in our own east Surrey Upper Greensand, useful for dating it to ca. 105 million years bp, I am not at all clear to what extent our firestone quarries may pose a radiation hazard! There are certainly quantities of Cornish-sounding trace minerals such as Tourmaline and zircon easily detected in SE England rocks (even in the Tertiary strata) by anyone with sufficient bromoform to separate them out and a microscope to identify them.

Much of the information above is summarised from a particularly interesting issue of the Quarterly Journal of Engineering Geology (vol. 24, part 2, 1991) and in particular the following papers:

T.K.Ball et al (1991) Behaviour of radon in the geological environment: a review. Q. Journal Engineering Geology 24(2), 169-182

D.P.Creedy (1991) An introduction to geological aspects of methane occurrence and control in British deep coal mines. Ibid 209-220

G.M. Williams and N. Aitkenhead (1991) Lessons from Loscoe: the uncontrolled migration of landfill gas. Ibid 191-207

Paul W. Sowan 3.8.91

Railway Tunnels Reach Their Centenary and a Half

161 years ago the railway system was born, and it is now nearly 150 years since "railway mania". (1845-6). Therefore it is not surprising that we are now reading reports of 150th celebrations of railway tunnels. Two examples follow, and I would be pleased to recieve others

Dean Head Tunnel

Dean Head tunnel was the first railway tunnel to pierce the Pennines. Opened in March 1851, at 2886 yds. it was then the longest railway tunnel in the world. It is still in use connecting Manchester, Leeds and Bradford but a petrol tanker train fire on 20th December 1984 nearly caused its permanent closure.

Local authorities organised a celebratory event.

Abstracted from, Railway Magazine, May 1991, P.309

Box Tunnel

This was completed in 1841 for the GWR and opened on 30th June 1841. Thus London and Bristol were linked in a revolutionary transport development.

The tunnel is 3193 yds. long and and was constructed by sinking a series of shafts to the required depth, and linking these underground. (The English system.) It was an extremely difficult and dangerous project which took 4 years to complete and over 100 men died. These were from a mainly local labour force employed by the contractor Geo Burge of Herne Bay.

Although it was dug through Bath Stone which was assumed to be sound it eventually proved to be unreliable and in time the tunnel was lined with bricks.

Abstracted from Search, Bulletin of the South Wiltshire Industrial Archaeology Society. Tom Matthewson-Dick, No. 54, September 1991

M.H.Tadd Oct. 1991

More on Camden Town Catacombss

June Gibson has sent an extract from, "The London Nobody Knows" by Geoffry Fletcher, Reprinted 1989 by Cassell; and also notes from the Public Inquiry in 1990 into the proposed development of Camden Goods Yard and Oval Road.

In the first, the author writes in a poetic vein about Camden town. Since both have catacombs the author is moved to compare Camden Town with Rome. He walks us down uncanny horse tunnels with "glistening damps". There is also a very fine drawing of one of the tunnels. If you like literature it appears to be a book worth reading, and bear in mind at first sight Camden Town is a dirty beat up place not at all the usual place to inspire poetry. Also the book was the subject of a television film, with James Mason as the narrator, which some of us had the pleasure of viewing.

With regard to the notes on the Public Inquiry I must first retract my statement that Camden Town is a dirty beat up place. This is because Industrial Archaeologists can see through the neglect and misuse of the ages and attune themselves to the vision of the original architects and engineers. But so can property developers! who see industrial sites as sources of commercial exploitation and in the case of Camden town there are already signs of urban renewal and a growing vitality is manifest in the famous market. Its a prime site for the developer.

The Inquiry was a contest between those who wished to restore the Camden Town goods yard area, to something resembling its former glory and preserve it as a monument to the various stages in railway development and architecture, on the one hand; and those who wished to adapt the area to modern needs and fashions with a limited regard to the industrial history of the area on the other hand. In the event it appears that the latter won, but only by the personal intervention of a government minister.

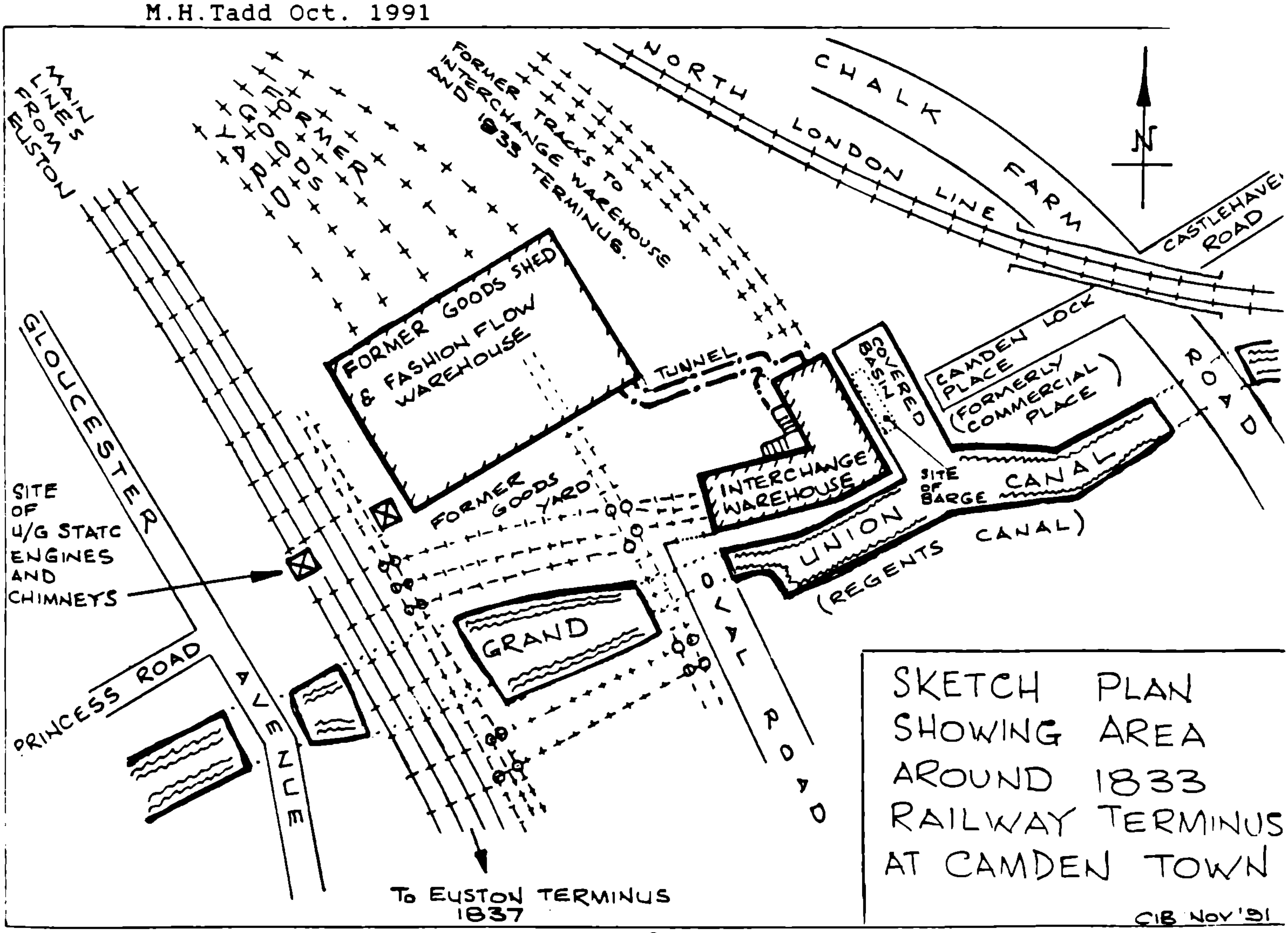
The statement of Anthony Richardson, architect, representing the first school of thought clarifies the purpose of the whole complex of tunnels and buildings, in and around the former goods yard and explains the observations described in the previous newsletter.

When the London and Birmingham Railway was conceived in the 1830s one of the considerations to was connect with the London docks. One method was to make use of the Regent's Canal. Terminating the railway at Camden Town on the northern bank of the canal achieved this. In the previous newsletter I described entering a tunnel at the eastern end of the demolition site and following into the area where eventually the barge on the canal was spotted. This was the area of Robert Stephenson's proposed 1833 railway terminus. It is not clear to me if this was ever used as a passenger terminus but it was used as a canal and railway interchange. It is described by the architect as the interchange warehouse. The considerable association of the area with horses, arises because it also acted as an interchange with road traffic. Do any of our readers know anything of this, what must have been, a very considerable trade?

The directors of the London and Birmingham Railway wanted a terminus further into London and in 1834 it was decided to extend the line from Camden Town to Euston. Thus the Interchange Warehouse became at the end of a branch line. To reach Euston the new line had to cross the canal which caused a severe gradient between the canal bridge and Euston Terminus. But, at first, the locomotives were not powerful enough and there was need for a static train haulage engine, the site of which we believed we discovered.

The demolition site, which was a major feature of the day of our visit is marked on the OS map of 1873 as a Goods Shed. It later became the warehouse for Fashion Flow

M.H.Tadd Oct. 1991



Some thoughts on roof-falls

How do mine and quarry ceilings fall? Little by little, or all at once in one almighty crash? What triggers it off? Gradually increasing forces or some 'last straw' minor event? What happens underground during an earthquake? What happened in North Wales as a result of the relatively recent (? 1984) earthquake? We do not know the answers to these questions, and suspect each question may have several answers anyway, depending o the local conditions. But we are compiling a dossier of case histories. Where major roof-falls have been seen by surviving witnesses, as in a Scottish stone mine early this century, and in Maastricht a few years ago, it is clear there was no warning ... the roof simply fell. The author of this note was missed by a major roof-fall in the Godstone quarries by a margin of up to a week ... having conducted a party under the precise spot shortly before it was discovered. The Reigate sand mines,too, have a history of sudden catastrophic collapses without warning. (And the Godstone sand mines. As opposed to the fire-stone mines at Godstone here discussed. Editor)

The latest addition to the case history file is a Dutch site visited a few years ago by SB members ... Heidegroeve, an underground stone quarry near Valkenburg. This has been reported in some detail by D.G.Price in <u>Chalk. Proceedings of the International Chalk Symposium held at Brighton Polytechnic on 4-7 September 1989</u> (ed. J.P.Burland et al., Thomas Telford Ltd., 1990)

On 23 June 1988 the seismograph in Valkenburg, about 2.8.km away recorded an earthquake shock at 18hr 13m 34s Dutch summer time. The shock lasted about 45 seconds. Other instruments up to 17 km away also recorded the event. Shortly afterwards, walkers in the public open space above the quarry noticed cracks in the footpaths. Examination underground revealed that a substantial area in the southern most part of the quarry had either totally collapsed or was sealed off by a major collapse. Pieces of rock appeared to have been blown out of the mine entrance to the other side of the adjoining road, Plenkerstraat.

A study of the remaining accessible pillars was made, and these were classified as follows:

Class 1 - no cracks

Class 2 - cracks in top corners

Class 3 - cracks in top and bottom corners

Class 4 - cracks throughout pillar

Class 5 - failed pillar

It is suggested that 'failure is imminent in pillars in which show a class 3 fracture pattern' although, of course, these are very much taller pillars (up to 4.65m) than we are usually familiar with in the UK. 'This ... height renders pillars less safe than shorter pillars of similar cross section.'

'Why did the mine collapse?' In the now collapsed area, it appears, the quarrymen elected to work to greater ceiling heights than elsewhere; and it is recorded that they often found their stone-cutting saws trapped by rock pressures closing up the saw-cuts. As quarrying was continued southward, the overburden increased from 5m near the entrance to about 44m Furthermore, the German occupation forces converted a part of the mine into an underground factory and, in doing so, cut away parts of the existing pillars. Long-term creep deformation is also though to have played a part in the e collapse.

Paul W. Sowan 1.4.91

NB. Referring to the Godstone mines, the roof-fall occurred in a heavily pit-propped part of the mine. A few years previously the caving club had inserted wooden pit props around an apparently sound pillar on the advice of the former mine owner, Mr. James Gardner Snr. He said that you could identify unsound roofs by the fact that they would emit a hollow sound when tapped. The preventive measure was to insert the props, which were therefore termed 'wind (as in moving gas)-up' poles. The fact that the pillar in question has now deteriorated almost to nothing, while the props we, the caving club inserted, remain the almost sole support for the roof seems to prove him right. This points to the fact that, the areas of this mine which are pit-propped, are unstable and can collapse when the props have lost their strength.

Editor

Another road tunnel - in Ireland

I have for some years been collecting data on British and foreign early road tunnels, partly for their own intrinsic interest and partly to support or demolish the claim (as the case may be) that at Reigate is the oldest such tunnel surviving in the British Isles. An older one (ca. 1812) of course collapsed and was widened out to the impressive cutting at Highgate Archway. There are two in Dorset dating from 1830s turnpikes, and one in Nottingham dating from the mid 1850s. A late 18th C example at Liverpool may well not have been, strictly speaking, on a public road, but merely linking two open quarries.

Casually browsing through the 1916 issues of the YMCA'S Our own gazette I was delighted to find a photograph of a 'tunnel on the Kenmare Road' and an article by Charlotte Mason on

'Killarney and Glengariff' (in pages 26-27) which contains the following statement:

The strongly-built little town of Kenmare, founded by Sir William Petty in the 17th-century ... standing on the highway between Killarney and Glengariff ... A run by car from Kenmare to Glengariff is about ten miles; ... every bit of the way is through wild, rugged and majestic scenery; the road, leading high out of the valley up the hill sides, attains a height of 1,000 feet above the level of the sea, and with a gradual ascent of one hundred and fifty feet in a mile.

The car passes through two tunnels, by which the road penetrates the mountains; one tunnel which is 200 yards in length, stands on the confines of Kerry; here the road enters the county of Cork, and winds amid- the stern mountains of Glengariff to the sea, at the head of Bantry Bay.

Perhaps our Irish readers, could provide further details and dates for these two tunnels, or for the road, on the Kerry / Cork border?

Of Indexes and Bibliographies

The SB index to Bulletins and Newsletters has now been reformatted but the up-to-date edition will not be available until the New Year. At 20 pages its price will be between £1 and £2 according to printing costs.

Paul Sowan is engaged in more than one bibliographic project. His latest is; Bibliography of published works on man-made and man-used underground structures in Europe - Excluding UK and excluding metalliferous mines and workings for fuels or water.

This follows on the heels of a similar one compiled for the UK in conjunction with Andy Bowman. An adjunct to this is a list of materials covered - four pages long, ranging from aggregate to writing sand.

When generally available these bibliographies will be welcomed by all serious researchers in this field

A bibliography which is available, and to which Paul has contributed, is British Mining History, published by peak District Mines Historical Society. So far issued in three parts, each 80p.

Joep Orbons has worked with other members of Sub. Brit. and other people on the continent to produce a 30 page dictionary of terms encountered in underground studies. The second edition was published in Rome this summer under the English title, Draft. "Lexicon of words concerning the subterranealogy." The authors are Eduardo Capuano and Joep Orbons."

Except for a few terms at the back it does not define the terms listed. It gives equivalent words in five languages. E.g. Craie, chalk, kreide, creta, krijt. The alphabetic order is of the first language, French. Therefore if you were to see the Dutch term krijt, it would be difficult to find in this dictionary. To be fully effective the dictionary will need to be presented in alphabetic order in all five languages. It is assumed that this is the authors' eventual intention.

Recording

Make yourself into an Archaeologist.

At the AGM the chairman bewailed that SB does not do proper archaeology. In fact many of our members do! - but for other organisations which take historical precedence in their lives. In fact we have recorders and surveyors second to none. This notice is not aimed at them. It is aimed at people who do not wish to commit themselves to advanced surveying but who can easily do valuable recording of structures often overlooked.

Basic recording.

Go to your local underground feature (with permission if necessary), or any feature; equipped with a piece of paper, some kind of measure, a map and a writing implement. A compass would also be very nice. On the paper, write the OS grid reference, the date and your name(s). Do a few measurements and say what your measuring instrument is. Also give some sort of orientation. Say whether you used a compass or not. Finally say exactly what you see and your impression of the place. Don't bother about good English prose or good writing.

The final stage is the one where it all goes wrong - you put the paper aside and forget it for several years! Don't do that send it to me and I'll commit myself to including it in the SB book of surveys.

When a property developer flattens the site next week yours could be the only record. And don't be deterred because someone else has already recorded the site - its altered since then.

Here is an example

Niche in Sand cliff. Visited 10.11.91

TQ 3110 5030

South of "The Crown", Nutfield, Redhill, Surrey. Sand cliff adjacent to start of east bound footpath .

Cliff runs approx. N-S. Niche can be walked to, but underground thick. Area riddled with badger sets? Sand bank at bottom of cliff. In Lower Greensand - Hythe beds. Foot holds and rope evidence of children playing. Neat structure of niche does not suggest children. Area was once sand pit. Was this remnant of underground working?

Suggestions of 2 further niches, but choked with sand, on line with base of this niche. One on left 214ins away, one on right 66ins away. One on right penetrates indeterminate distance. (Any interest to bat people?)

Dimensions. Ht.56ins Position ,77ins below cliff top
Width 25ins
Depth 40ins
(Measured with 3m steel tape.)

Photographed.
Graffito Rock is extremely soft but one, very deteriorated, set of initials carved.

M. Tadd. 10.11.91

Here is the bottom line. If you do one survey - that's all you need do. But if you indicate that you would like to do another I will send you a recording card devised by Joep Orbons and instructions on its purpose and use.

Book Reviews

A la decouverte des souterrains de Paris

Author: Patrick Saletta
Publisher: SIDES, Antony, France (1990)
ISBN: 2 86861075 7
334pp. with numerous coloured and monochrome illustrations
Price: F 450 + FF 35 postage

There have been numerous books on underground Paris. This is the most lavishly presented one I have ever seen, an asset to any SB coffee table.

The opening chapter deals, very properly, with the stone quarries. Stone was worked underground in large areas of what is now the southern part of the city, and in smaller areas north of the Seine at the eastern and western extremities. Some historical illustrations are presented, alongside impressive modern views of what can still be seen underground. Methods of extraction are explained, as are the consolidation schemes from the 18th century onwards. Amongst maps reproduced are some excellent coloured-coded representations of still-accessible quarry and inspection galleries, of a far higher quality than in Suttle's recent volume (Rene SUTTLE (1986), Catacombes et carrieres de Paris, SEDACS) To a large extent the inspection galleries were maintained, through otherwise back-filed void, beneath the main Paris street pattern, so what is accessible below ground today mirrors the street pattern above and presents , of course, minimal interest for quarry archaeologists. There are, however, areas of unfilled original quarry workings still accessible in some places, one of which is accessed via the tourist the tourist route through the catacombs. Also reproduced is a section from one of the sheets of the impressive but expensive Atlas des carrieres souterrains de Paris ... published by the Inspector Generale des Carrieres of the City.

It is a surprise, and a disappointment, to find that current French usage employs the word carriere (quarry) for all sorts of excavations for, besides squared stone for building, such other products as gypsum, sand, clay,etc. So 'carriere' in French has suffered the same fate as 'quarry' in English. The second chapter in Saletta's work deals with the 'gypsum quarries' whence came 'plaster of Paris'. These. opencast and underground , were in the northern and northeastern parts of the City. There are some spectacular underground views, and some especially interesting historical illustrations for this section. Towards the end of the chapter there are sections on clay workings, sand workings and chalk mines. The chalk mines are mostly outside the City of Paris, for example at Meudon, an independent outer-Paris 'borough' to the south-west. In scale and in the care with which they have been cut to smooth walls and perfectly arched roofs they are much more impressive than run-of-the-mill English mines.

Mineral extraction pure and simple takes us to page 91, not halfway through this volume. The remainder is devoted to a variety of secondary uses, transport functions etc. The catacombes have a chapter (old stone quarries reused as ossuaries). So do refuges and bunkers dating from the German occupation and earlier, with some information on the activities of the French Resistance, and on nuclear shelters. Then there are crypts and sanctuaries, ancient and modern; cellars; bank vaults and the like. Extensive treatment is given to underground transport, service tunnels, water supply routes, and sewers.

Paul W. Sowan 1.3.91.

London's only equivalent book, and only one has been published, is London under London, a subterranean guide, a more modestly produced volume by Richard Trench and Ellis Hillman (John Murray, 1985.) This deals with underground railways and services, shelters and bunkers and communications centres, underground rivers and sewers, and assorted oddities. It is stronger in historical illustrations, but lacks the profusion of colour plates offered by Saletta. But, of course, London's quarries were never near London ... they were (and still are) in East Surrey, in Dorset, in Normandy, and elsewhere. And even London's chalk mines, like those of Paris some distance out of in the suburbs are less grand and less accessible than their French equivalents. And as for plaster, we have always gone to Paris for that anyway.

Paul W. Sowan

Innovation and the rise of the tunnelling industry.
Graham West, 1988, Cambridge University Press. ISBN 0 521 33512 4 xv + 355pp £40

This is a most interesting book, dealing with the history of inventions in the digging of tunnels. Many will be familiar with shipworm ,Teredo navalis, as the supposed origin for Brunel's idea for a shield tunnelling machine for his Thames Tunnel, although as West points out the parallel is not an exact one. 'Boring through wood a self-supporting medium is more akin to boring through rock than boring through soil. The shell of Teredo does not support the wood during boring, and the calcium carbonate lining does not support the burrow - it probably serves to protect the body of the animal from being bored through by another shipworm.'

This well-referenced work contains chapters on, amongst other matters, ancient tunnelling, compressed air rock-drilling machines, nitroglycerine bits, tunnelling shields, compressed air tunnelling, prefabricated tunnel linings, pressurised face tunnelling shields, immersed tube tunnels, hard rock tunnelling machines, soft ground tunnelling machines, etc.

Paul W. Sowan 1.4.91

Post-medieval archaeology in Britain.

David Crossley, Leicester University press, 1990.
ISBN 0 7185 1285 5 ix + 328pp

' The archaeology of the centuries after 1500 has attracted resources on a growing scale over the past 30 years. Excavation and field work have been published in many national and county journals, as well as in Post-medieval Archaeology, whose foundation, as the journal of the society of that name, was a recognition of the amount of work for which, in the mid-60s, it was difficult to find an outlet.'

Members of SB will need no convincing concerning the validity of an archaeological approach to the understanding of subterranean cavities. All too often, the still accessible and tangible remains are, in the absence of any documentation, the only evidence available and, arguably the best evidence imaginable even when documents survive.

David Crossley was, of course, the co-author (with Henry Cleere) of The iron industry of the Weald (Leicester University Press, 1985.) It is not surprising, therefore, to find one of the longest chapters in the book is that devoted to ferrous metals, although for the mining of iron (and coal, but not of non-ferrous metals) we have to turn to the very much shorter chapter headed mining and quarrying. The mining of non-ferrous metals is dealt with in a separate chapter under that heading. The archaeology of mining and quarrying, insofar as Crossley deals with the subject at all, is reported almost exclusively in terms of surface remains and their interpretation. That good archaeological work can be conducted in more or less subterranean excavations is witnessed by recent work on the Grimes Graves flint mines, the Wilsford Shaft in Wiltshire, and by the investigations of the Early Mines Research Group. That equally good work has been neither conducted nor reported in any volume for the post-medieval period is an important message in this book. Indeed, Crossley remarks that, 'there is no extensive literature on the archaeology of quarrying, a topic with considerable potential.' It is unfortunate that he fails explicitly to recognise that, right through into the 19th and even early 20th centuries, much building stone, limestone,chalk, clay, fullers earth, and sand was won underground; and that where (as is often the case) these workings are still accessible for study, there are valuable opportunities for archaeological research; and that,in the case of building stone , at least, there is scope for matching quarry of origin with stone in situe in extant fabric. Certainly there are peculiar access problems (as there are in nautical archaeology, to which he devotes 4-page chapter), and the analysis of stratified deposits is often not possible - mine sand quarries being pre-eminently zones of material removal, rather than accumulation. But for the preservation of a wealth of un-weathered evidence, largely tool marks and undisturbed abandoned earlier workings, from which relative if not absolute dating can be established, and methods of working deduced, the mine and quarry environment has perhaps more to offer than is hinted at in the phrase 'considerable potential'.

It is clearly high time that the mine and quarry archaeological fraternity's work was offered for publication in the mainstream local and national archaeological journals. There is little doubt that it would be welcomed.

Underground archaeology, other than in mines and quarries, is (likewise) barely mentioned, although ice-houses do feature in pages 72-73. The whole field of underground archaeology introduced in Harriet Crawford's Subterranean Britain. Aspects of underground archaeology, in 1979, has yet to be developed into a valid branch of the subject acknowledged by mainstream practitioners.

Paul W. Sowan 2.4.91

Kent and East Sussex Underground. Members of the Kent Underground Research Group. (J. Bradshaw, N. Caiger,

M. Halpin, Rod Le Gear, A. Pearce, H. Pearman, T. Reeve, P.W. Sowan) Meresborough Books, 17, Station Road, Rainham, Kent. ME8 7RS. 1991 ISBN 0948193 581 £5.95

The book, A5 size, is well laid out and illustrated throughout. The writing is clear and concise - no waffle. It brings to the reader's attention various subjects from mining through to military sites, domestic underground functional structures and tunnels both secret and otherwise. It offers an insight into mining activities, explains the geology in simplified terms and the actual appearance of the extracted material, even down to the colour which is often excluded from other books. The flora and fauna 'cave wildlife' is discussed and also included in a section on natural caves.

Descriptive diagrams of the way subsidence occurs and the methods of working in deneholes, for example, are excellent and clarify these various functions. One small criticism that the legends on some plans are minuscule due to the printers' shrinking process in order to fit the page size of the book.

I congratulate the writers on placing their 'Warning' page, particularly on the safety factors, at the start of the book. But, just a minor point, I would have liked to have seen a reference to the non-disturbance of bats during their hibernation period and cross referencing the information to the bat section.

I feel that this delightful compact book is useful for all those who live in Kent and Sussex and are interested in their local environment. I would even go as far as to say it is a 'must' for their bookshelf. For those outside the relevant two counties , it still makes an interesting read and I am glad to add it to my collection.

To summarise, it a real taster for underground research.

Sylvia P. Beamon 30.10.91

Conference Reports

The Subterranea Britannica Day Conference. 26th October 1991

This was very well attended and is summarised as follows

Tim Martin - The water supply to Brighton and Hove

Tim Martin is a SB member who works at the Brighton and Hove Engineerium site of a Victorian pumping station.

He briefly traced the history of urban water supply which started when the needs of the poor were considered. In the case of Brighton and Hove shafts were sunk into the chalk downland and horizontal tunnels dug from the bottoms to tap the aquifers. Tim showed numerous slides of the tunnels, shafts and pumping equipment. He spoke of 5 and a half miles of tunnels.

An unusual feature in the locality, was that sea water was pumped to some houses near the sea front. For these 100 or more houses there was h and c and s on tap.

<u>Paul Varley - Tunnelling Machines for the Channel Tunnel</u>

Paul Varley is an expert consultant engineer who's name appears elsewhere in this newsletter and will probably appear in future editions.

Apart from being expert on the latest machines and tunnelling he is a student of tunnelling machines in history, principally the Whittaker Machine. These were discussed in interesting detail but there are still apparently prospects of discovering an abandoned tunnelling machine of the past. This is the sort of project young SB members should get involved in.

A video was shown of a vast cavern being excavated at a cross over in the Channel Tunnel. This brought home the breath taking scale of the enterprise.

<u>Michael Crumpton - Hydraulic Rams.</u>

A hydraulic ram is a device in which the energy of stream water is used to pump water up a hill away from the course of the stream. The stream water is brought to an abrupt halt by a valve, and the shock causes water to be forced through a non-return valve on the up-stream side of the first valve. This water passing through the non-return valve first hits a cushion of air, the compression and decompression of which, forces the water up an outlet pipe. The process is a continuous one, since the initial stop valve opens in static water allowing the flow of the stream to accelerate once more and start the cycle again. Sounds impossible but it can force water up 100 feet.

The ram itself, and sometimes the associated pipes has to be housed often in structures bearing close resemblances to ice-houses.

Michael seems to have made the study these his own. His talk was very informative and entertaining

<u>Andrew Sargent of The Royal Commission on the Historical Monuments of England. - The National Archaeological Record</u>

Andrew Sargent works for the National Archaeological Record which has been collecting information most of this century. It is now in the form of a modern computerised data base (> 140,000 site records) and is at the service of the public. It is also underused. I suggest that many of us are compiling records, probably on a small scale, and that this may be a good place to deposit them. Better than letting your descendants, or irate partner, confine them to dust bin.

At least so Dr. Sargent convinced me. Please come to me for further information.

Chalk. Proceedings of the International Chalk Symposium held at Brighton Polytechnic on 4-7 September 1989
ed. J.B. Burland et al., 1990; Thomas telford Ltd. ISBN 0 7277 1541 0 v + 695pp £115

This volume of important papers covers the following aspects of the engineering geology of chalk: (1) Overviews and field logging; (2) Mechanical properties; (3) Foundations; (4) Earthworks; (5) Underground excavations and slope stability; (6) Hydrogeology; (7) Petroleum; and (8) Planning

The papers dealing with underground excavations are as follows:

L.M.Lake, Underground excavations in the chalk - reviews a range of modern works, including the Thames cable tunnel (Gravesend - Tilbury, 1960s); tunnels at Peckham and New Cross (1970s); the Portobello outfall (Brighton); the Dartford tunnels; the Lewis road tunnel; the Killingholme gas storage caverns (Humberside); and the Channel Tunnel.

P.M. Varley, Machine excavation of chalk rock at the first Killingholme gas cavern , South Humberside - the first part of storage caverns for 240,000 cubic metres of liquified petroleum gas created in unlined chambers in hard chalk at a depth of 190-200 metres.

D.G.Price, The collapse of Heidegrove; a case history of subsidence over abandoned mine workings in Cretaceous calcarenites - recording the collapse of part of an underground stone quarry near Valkenburg in the Netherlands.

C.N. Edmonds, Review of underground mines in the English chalk; form, origin, distribution and engineering significance - dealing with flint mines, deneholes, chalkwells, bell-pits, chalkangles, pillar and stall chalk mines etc., with an interesting discussion on the spatial distribution in the UK of these classes of underground workings.

There are also more technical papers on seismic investigations in connection with the Channel Tunnel, rock bolting in the Lewis road tunnel, etc.

It is good to note, and not only in Edmonds' survey, that a number of civil engineers are alive to the need to look into the history of older tunnels and cuttings, and to consult underground archaeologists and others who have over the years built up considerable first-hand and historical knowledge of all classes of underground excavations in the chalk. Their work is acknowledged appropriately in this volume.

Paul W. Sowan 7.4.91

The International Conference Congress for Souterrains July 1991

The Societe Francaise d'etude des Souterrains together with the Austrians hosted the international congress 7-7 July, 1991 at the Weinberg Schloss, Kefermarkt. This castle, set on a hill could be seen from afar. For several miles, a twisting road led up to this imposing edifice. It has been taken over by the local municipality and is being beautifully restored, to be used as a conference centre for schools and other groups in Austria. The renovations - not quite finished- entailed piles of sand, barrows and concrete mixers laid around; a could-be hazard to unwary delegates! Alan and I as the only Brits did not know quite where we should go for meals. German speaking members had one dining room whilst the other was for the French. The Georgian couple and ourselves eventually joined the French but I found out afterwards the Georgians only spoke Russian and German. When Joep Orbons (Dutch) arrived he was placed with the Germans - it gets very complicated but all good fun.

The papers were in German and French with the exception of mine on Mason Marks. Dorothee Kleinmann did magnificent work by translating verbally all the papers from one language to another.

The visits commenced with a 3 hour visit inside the mountain of Hallstatt from which salt has been continually extracted since prehistoric days. The delegates, by necessity climbed up and down hundreds of small steps both narrow in width as well as in depth. Other visits included excursions to the medieval quarry of Steyreggerhohle at Muhluirtel. On the following day there were two coach trips to different areas. The coach we were on, visited a souterrain under a castle motte (Cf. Baron's Cave, Anstey Castle amongst others.)

It is regrettable that more British people do not attend these continental gatherings as it is most rewarding to meet like-minded people from a variety of countries to exchange information as well as the social contact.

Sylvia P. Beamon 30.10.91

This newsletter has been produced and edited by Malcolm Tadd, 65 Trindles Road, South Nutfield, Redhill, Surrey, RH1 4JL. Tel. 0737 823456. Correspondence is welcome and trip reports and field notes are urgently solicited. Readers are reminded not to trespass unlawfully on sites or damage or disturb flora and fauna particularly bats.

NAMHO FIELD MEET 1992

DATES: 27-28th June 1992 **VENUE:** Shropshire

HOSTS: Shropshire Caving & Mining Club

This year we are expanding the traditional programme of underground trips by offering a wide choice of activities to cater for every taste. These will be :-

1. **WORKSHOP SESSIONS** - taking place over the whole weekend, allowing participants to learn new skills or compare notes with expert instructors. The sessions will be on

   a) Underground Surveying) These sessions will be
   b) Underground Video Recording) for restricted numbers
   c) Single Rope Techniques

2. **SEMINARS** - organised by the Institute of Mining History & Archaeology on the theme of surface preservation of mining sites. The theme will culminate in a surface field trip to Snailbeach Mine on the Sunday afternoon.

3. **SURFACE FIELD TRIPS** - taking in areas of mining and general industrial archaeology.

4. **UNDERGROUND FIELD TRIPS** - with a wide choice of visits to the mines of Shropshire. These will vary from easy trips to strenuous ones involving extensive use of SRT and ladder climbing.

5. **SATURDAY NIGHT SOCIAL** - with a bar, meal and entertainment.

The base for the weekend will be at Ironbridge Gorge Museum, where the seminars and workshop theory sessions will be held. Practical workshop sessions and field trips will take place at numerous surrounding sites in Shropshire, with minibus transport to most of the locations. A central camping site will be available but all types of accomodation exist locally. A standard charge of £5 per person will be made to cover general expenses over the weekend. The Saturday night social is optional and will be charged for separately.

Please notify your members about the event so they can keep the dates free, further details and a booking form will be available from February 1992. Some workshop sessions have restricted numbers and places will go to those who book first. To ensure you receive a booking form when available, send an A5 SAE to
....

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T. 0952-253310

NAMHO. (National Association for Mining History Organisations)

We are pleased to attach this notice from NAMHO. NAMHO is an organisation on which we are represented and some of our members will vouch for the interesting events which they organise. An article on all the organisations on which SB is represented will appear in the next Newsletter.